

My late brother was autistic and I noted what things effected him such as bright light, unpredictable sounds, heat, obsession with detail over the bigger picture, order, sameness, stimulation, stability and calm. I completed a thesis on building for people with autism whilst at college and since practicing as an architect I have designed a number of buildings for children and adults with autism as well as continuing my research.

As we well know autism is a complicated disorder that affects communication and the senses. We also know that 'one size fits all' on the basis of a shared label ASD may not be effective in helping these individuals.
(Donna Williams)

Architecture can best be described as the 'art or practice of designing buildings for human use'. It takes account of Form, Function, Construction, Beauty, Convenience, Propriety, Delight, Utility, Durability, Strength, Proportion, Light and Freedom. It can also be explained in the following way:

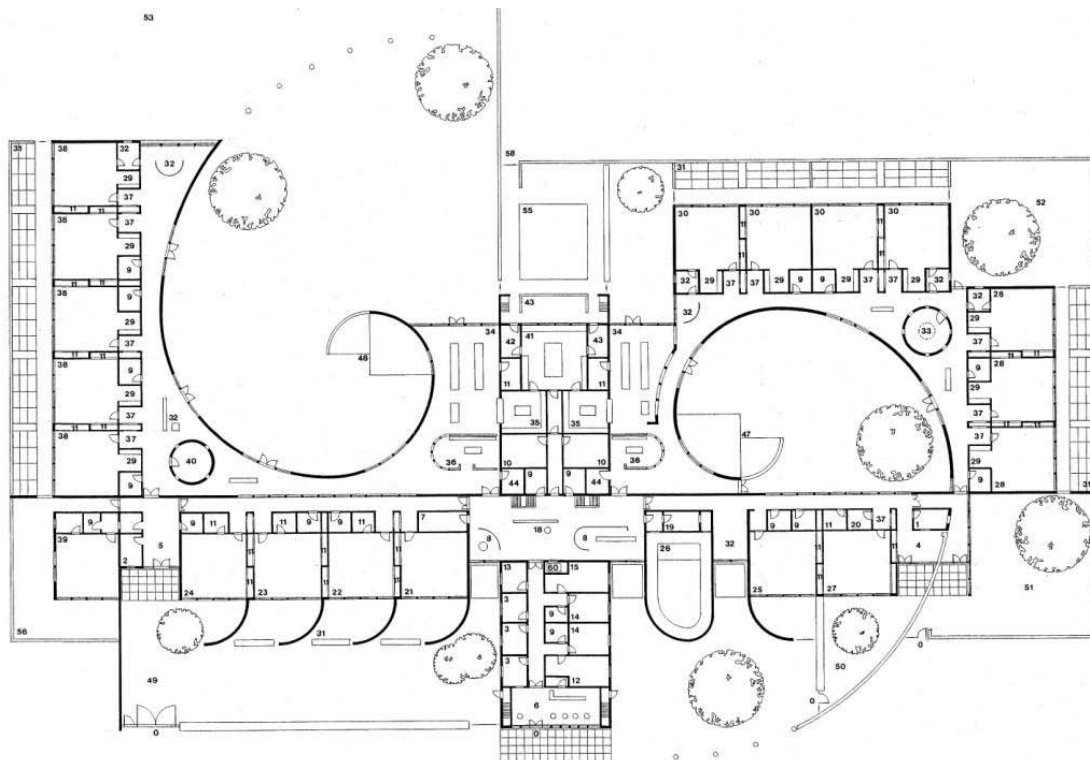
You employ stone, wood and concrete, and with these materials you build houses and palaces; that is construction. Ingenuity is at work. But suddenly you touch my heart, you do me good, I am happy and I say "This is beautiful ". That is architecture. Art enters in. (Le Corbusier)

I have taken some simple concepts which if used in the designing of buildings can have beneficial effect for people with ASD without being specific and therefore marginalising them into bespoke buildings that have special needs.

Calm, Order and Simplicity

Complexity can cause stress it is not harmonious. For people with autism the effects of complexity are much greater, they are unable to discern separate noises, shapes etc. easily, this can lead to tension.

If a building or set of buildings are planned in a simple clear manner the user will require little effort to use and enjoy the building. A clear layout and organisation of spaces can help a person use a building without confusion as to the location of rooms. A building that has a sense of clarity and order has a calming effect on the user, whether they are autistic or not, the stimulation is reduced. To provide a calm 'back drop' for people with autism can assist in reducing some elements of stress which is helpful for their well being.



This is a plan of a school I designed in Newcastle. The idea was that the Junior and Senior schools are separated by the main communal and administration departments. The classrooms for each school are located off a courtyard, defined by the Golden Spiral. It is this courtyard that provides a constant source of reference when you circulate around the building or exit a classroom. The intention being that you are always connected with this source of reference and able to easily locate yourself at any point within the building therefore providing a source for calm, order and clarity.

Calm and order is not confined to a buildings plan and section it can also be observed in the use of materials

The Cistercians reflected their austerity of their faith in their architecture. The plain simplicity of the stone walls, floors and roof vaults is uninterrupted by the complex distractions of adornment and embellishments. This Abbey and its concept is over 800 years old yet is a perfect example of simplicity calmness and order. The same material is used everywhere



This is a more contemporary example of a space I designed that used similar materials for the walls, floors and ceilings. The limited pallet of materials assists clarity and makes for a calmer space.



Maintain a stable, ordered secure environment. The autistic child simply cannot function if there are too many daily changes..... The autistic child is unable to bring order to his world. You must provide that order in his environment. Autistics might march to a different beat but that beat can be meaningful (Temple Grandin)

It is not always easy to limit the use of materials but I feel at least the application of restraint should always be in the forefront of ones mind when designing spaces for people with autism.

Minimal Detail and Materials.

Complexity in the detail of a building can cause visual distractions and sometimes obsession. People with autism can become absorbed with such detail therefore you should design out any elaborate unnecessary detail using a limited pallet of materials and reduce hard edges which in turn will provide a less distracting more restful solution.



This is an example of a reduction of detail around a window which helps eliminate shadows and junctions whilst also having a calming effect. Note the absence of architraves and skirtings



Another example of restraint regarding the number of materials used but it is interesting here how the children fill the space with life and colour

It can always be guaranteed that people will enliven a space therefore a broad more bold detailing technique using less elaboration and materials may reduce stimulation at the beginning allowing stimulation to be introduced.

Variety in colour can be stimulating therefore restraint here helps to provide a more calm gentle space. Consistency of heights of door handles, lights switches and the use of under floor heating helps with the overall feel of calm and order

'Every morning I had to catch a bus and tram for the long journey to this new school. It certainly was a new school as everything in it seemed new. There were shiny red banisters and curved tinted windows. There were indoor carpeted staircases everywhere, the whole place was a mass of corridors; a puzzle in which you had to chose the right door. I liked the banisters, which led to hallways with red doors running off them. I was constantly going into strange classrooms and sitting down before being escorted out and pointed in the direction of my own class.

On lunch breaks I would wander through the school watching various colours which disappeared under my feet and I would stop sometimes and stare at something for the entire break, like the polished floor of the gym or the reflection in the curved tinted glass windows. (Donna Williams)

Proportion

Ancient proportional systems resonate with something within the human mind or heart which recognises beauty in a very direct and intuitive manner. When we see a natural form such as a sunflower we automatically see its beauty. These proportional systems are derived from nature and are abundant in nature.

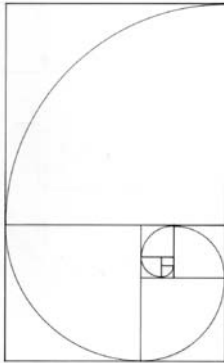


Vitruvius wrote: Our ancestors took their models from nature and by imitating them they were led by divine facts

The Greeks developed this theme through mathematical equation providing a proportion that humans find pleasing, it is referred to as the golden proportion. It is found in nature in abundance and is also seen at one of the world's most famous structures. The Parthenon at Athens, its dimensions can be fitted almost exactly into the golden proportion



The diagram below shows the golden spiral in operation creating a series of rectangles which can be used in plan and section. This proportion can help achieve well balanced spaces.



Some years ago I designed a small building which derived its proportion from the Fibonacci series of proportion, this is a proportional system which is close to the numbers of the golden ratio. The Fibonacci numbers are 0 1 1 2 3 5 8 13 21 34 55



This is a Children's Centre I designed which again uses the Fibonacci numbers as well as a limited pallet of materials



Whether or not people with autism have the faculty to understand and perceive good proportion is not known. I feel that some will gain benefit it may calm. As proportional systems can be designed into buildings at early stages and at no cost it is, in my opinion a worthwhile action.

Natural Light

The Key is light
and light illuminates shapes
and shapes have emotional power (Le Corbusier)

Natural light in any building, how it enters the building will uplift the spirit. Introducing light into a building needs very careful thinking with autism in mind. Too much variety may startle, too much shadow may create repetition as visual stimulation.

A chapel designed by Tadao Ando which for me has very strong emotional power



At Ronchamp in France the introduction of light is much softer.



This is a school designed by architects Greenhill Jenner which shows the use of sandblasted glass that diffuses the natural light providing evenness which is less powerful and distracting



A project I completed for adults with autism using clerestory glazing to gently throw even natural light into the space



Good levels of even natural light will help make and clarify a space, how it falls onto walls and floors will help a person come to terms with a space. As Le Corbusier states it has emotional power. It is how much power we should introduce into a space that we need to consider for people with autism

Proxemics

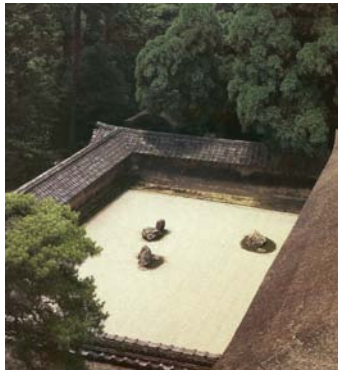
Proxemics is defined as the branch of knowledge which deals with the amount of space that people feel it necessary to set between themselves. Proximity is the condition of being near or close. This personal space surrounds the body. Most people guard this space to some degree. With autism this personal space can be greater and more sensitive.

During a normal day this space is often infringed. In a building spaces are defined by ceilings and walls. If they are to close the space is limited. To provide generous circulation space in a building will help reduce the impact of this infringement.

Containment

It is important that a child with autism is 'contained' for their own safety, but It is important that they are able to wander free, or certainly feel they can. Equally it is important that the carer is comfortable that the child can wander in safety. How we provide a safe place within which this child can wander is the essence. History and nature shows that this can be achieved in a subtle manner

A Zen enclosed courtyard which does not give the feeling of restriction



Natural forms can in some situations provide containment



Walls can be used to provide secure environment without feeling obtrusive and unpleasant from the outside view. This is a residential unit I designed for adults with autism which uses brickwork as the means of enclosure.



'All of us need a private place. Autistic children need their secret places too, in which they can hide and retreat to their own world. After all autism is a withness disability and autistic children need the security of their own hideaways. I had mine and it was a place for me to think and recharge myself.' (Temple Grandin)

Observation

We need to be able to easily observe the movements of children with autism for reasons of safety and well being, but it is important that this person does not feel as if they are being watched all the time. To feel free is important for children with autism. If we provide uncluttered internal and external spaces this will assist observation. If there are known secure boundaries that cannot be seen but are known this allows the children with autism to escape from view

Acoustics

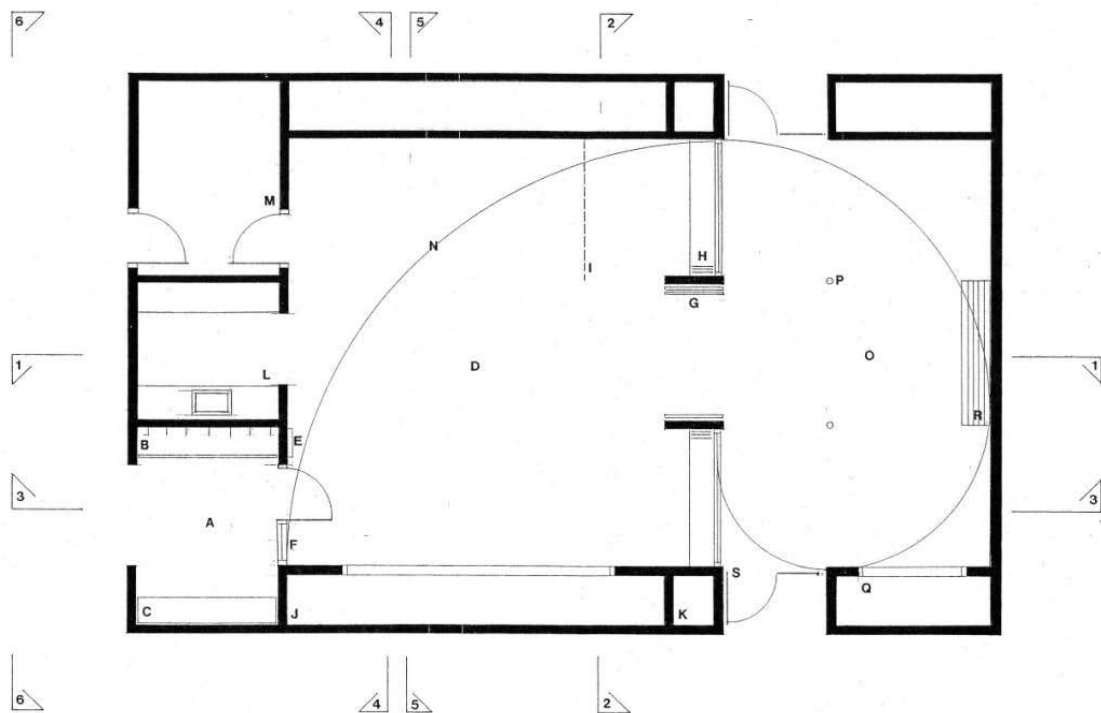
'Sometimes I heard and understood and other times sounds and speech reached my brain like the unbearable noise of an onrushing freight train. Noise and confusion at large gatherings of people overwhelmed my senses'. (Temple Grandin)

All people are sensitive to sound to varying degrees. My understanding of autism is that they struggle to discriminate different sounds and are more sensitive to sound. A building's construction needs to respond to this in terms of impact sound, flanking and reverberation transmission. This can be achieved in the type of construction such as grass roofs to limit impact from rain, to mass wall construction to good sound absorption of materials.

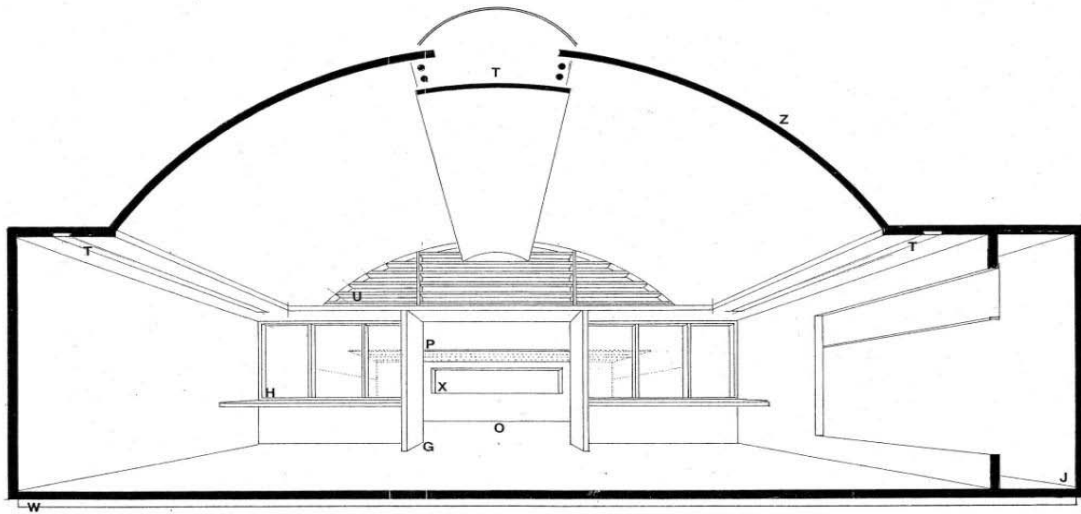


A school I designed in Hererford uses a grass roof to help reduce impact noise from the elements such as rain as well as being sustainable.

I was asked to design a classroom for Newcastle City Council that responded to the needs of the child with autism. The designs embodies some of the concepts discussed in this paper.



The plan based on the golden proportion. A small gathering space is located before you enter the room (A) to allow the teacher to prepare the children to enter the room. No thresholds exist at any doorway. The classroom has a withdrawal space located off it (M)which can also be accessed from the main circulation space. A protected external courtyard is accessed directly from the classroom (O). A wet room is located off the classroom. (L)



A barrel vaulted roof, 13 feet to the top provides good proportion based on the Fibonacci series and also provides good natural ventilation. Underfloor heating is used, storage is in the walls. All light switches are hidden from view. Side panels for one to one focus. The view to the outside is contained causing less distraction

A few years ago I developed a detailed design brief with Addington Special School for their new proposals for an all through state school for children with ASD. We carried out detail discussions with the staff and three day workshops with the children, which was enlightening. The result a detailed source of reference for the design of the new school.



Conclusion

The intention of these concepts is to hopefully provide a framework or menu if you wish to assist designers developing projects for people with autism .If we remain committed and connected with the overriding simple concepts then the approach to ASD design can not only be subtly specific but also universal. Always remember it is not what you put into the design rather it is what you do not do that has the effect. The power of restraint.

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